

REMARKS

This is a full and timely response to the Office Action of December 15, 2006.

Reconsideration and allowance of the application and all presently pending claims are respectfully requested.

Upon entry of this Response, claims 1, 4-10, and 26-29 are pending in this application.

Claims 2-3 and 11-25 are canceled. Claims 26-29 are newly added. The prior art made of record has been considered, but is not believed to affect the patentability of the presently pending claims. Applicants submit that the amendments clarify the invention(s) covered by the claims and that a new search is not required to examine the amended claims.

CLAIMS

Claim 1

Claim 1 is rejected under 35 U.S.C. §102(b) and 103(a) as purportedly being anticipated or unpatentable by Ross (U.S. Patent 5,830,529), Van der Zel (WO/020852241), and Jagmin (U.S. Patent 5,044,955), as described in detail in the Office Action. Amended claim 1 reads as follows:

1. A method of producing a three-dimensional object, comprising the step of:
 - disposing at least one layer of a first material onto a first area in an iterative manner using at least one ink-jet printhead, wherein the first material is selected from a build material and a contrast enhancing material;
 - disposing at least one layer of a second material and the first material on top of the first area using at least one ink-jet printhead, wherein the second material is selected from a build material and a contrast enhancing material, wherein the second material being disposed onto a designated area, wherein the first material being disposed onto a second area, wherein the second area and the designated area are different areas on top of the first area, wherein the first material and the second material are not the same material;
 - forming an identifiable structure from at least one layer of the second material;
 - disposing at least one layer of the first material on top of the second area and the designated area using at least one ink-jet printhead; and

forming the identifiable structure from the second material within the three-dimensional object, wherein the identifiable structure within the three-dimensional object being detectable using a non-invasive dimensional imaging device, *wherein the three-dimensional structure is selected from: a bone replacement, a dental structure, and a medical device disposed within a body of an individual.*

(Emphasis added). Applicants traverse each of the §102 and 103 rejections in the Office Action and submit that the rejection of claim 1 under 35 U.S.C. §102 and/or 103 in view of Ross, Van der Zel, and Jagmin should be withdrawn because Ross, Van der Zel, and Jagmin, individually or in combination, do not disclose, teach, or suggest each and every feature of claim 1 above. In this regard, Ross, Van der Zel, and Jagmin do not disclose, teach, or suggest that “the three-dimensional structure is selected from: a bone replacement, a dental structure, and a medical device disposed within an individual body” as recited in claim 1. In particular, Ross does not teach, disclose, or suggest a method of forming a bone replacement, a dental structure, and a medical device disposed within an individual body. Ross describes methods of making paper or paper like products. In addition, although Ross attempts to include a catch all for methods of printing, Ross does not describe free form fabrication methods such as described in the instant application. Further, since Ross does not teach methods of forming bone replacements, dental structures, and medical devices disposed within a body on an individual, the printing methods described generally in Ross do not include free form fabrication methods. Thus, Ross, Van der Zel, and Jagmin do not disclose, teach, or suggest, at least the limitations highlighted above in claim 1, and therefore, the rejection of claim 1 should be withdrawn.

Furthermore, in order for a claim to be properly rejected under 35 U.S.C. §103, the teachings of the cited art reference must suggest all features of the claimed invention to one of ordinary skill in the art. *See, e.g., In re Dow Chemical*, 837 F.2d 469, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988); *In re Keller*, 642 F.2d 413, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981). Further, “[t]he PTO has the burden under section 103 to establish a prima facie case of

obviousness. It can satisfy this burden only by showing some objective teaching in the cited art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.” *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

In order to establish the *prima facie* case of obviousness, the Examiner must establish a suggestion or motivation either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combine reference teachings in order to result in the claimed invention. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the prior art to suggest **both** the combination of elements **and** the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of these two prior art references, the prior art must properly suggest the desirability in the references themselves for combining the particular elements.

Van der Zel and Jagmin are not analogous arts. Although both are related to teeth, Van der Zel and Jagmin are not related because Jagmin describes placing an information carrier in a tooth while in the mouth of a person, whereas Van der Zel describes producing a tooth that is to be later put into an individual. Van der Zel does not describe an identifiable structure. The Office Action notes that Van der Zel describes the use of pigments/dyes, but these are only to color the tooth so that the tooth is the proper color relative to other teeth. Van der Zel never mentions using the pigments to make an identifiable structure. Jagmin does not mention freeform fabrication, which would be difficult if not impossible to perform to produce the three dimensional structure since the tooth is present inside an individual’s mouth. In addition, the

Office Action has not provided an objective teaching in the cited art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references in particular methods of freeform fabrication. One skilled in the art would not consider the combination of Van der Zel with Jagmin because the two references are in different fields, describe very different methods, and use different apparatus to perform the methods. In particular, one skilled in the art would not consider the teachings in Jarmin in view of Van der Zel (or vice versa) because Jarmin does not involve methods of the creation of the identifiable structure in a three dimensional structure using free form fabrication. Likewise, one skilled in the art would not consider the teachings in Van der Zel in view of Jarmin (or vice versa) because Van der Zel merely uses the pigments to color the tooth to make sure the to be formed tooth appears the same color as the other teeth in the mouth and never mentions producing identifiable structures. In addition, since Van der Zel does not consider using the pigments to form an identifiable structure, the pigments of Van der Zel would have to be reconsidered because the current pigments may not be appropriate for detection and/or for the structural integrity of the tooth. As a result of the foregoing, one skilled in the art would have to completely change the teachings of Van der Zel to accommodate the changes in view of Jarmin or vice versa. Therefore, the rejection of claim 1 should be withdrawn for these reasons as well.

Claims 4-10 and 26-29

Applicants traverse all of the 102 and 103 rejections in the Office Action. Applicants respectfully submit that pending dependent claims 4-10 and 26-29 include every feature of independent claim 1 and that the cited references fail to teach, disclose, or suggest at least the features of claim 1. Thus, pending dependent claims 4-10 and 26-29 are also allowable over the prior art of record. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

Notwithstanding the previous reasons for allowance, the cited references do not teach “disposing a third material onto a portion of the designated area, wherein the second material is a contrast enhancing material, wherein the third material is a contrast enhancing material, wherein the second material and the third material are different contrast enhancing materials; forming a second identifiable structure embedded within the identifiable structure using the third material, wherein the identifiable structure within the three-dimensional object being detectable using a second non-invasive dimensional imaging device” as recited in claim 26. Therefore, claim 26 is in condition for allowance.

Notwithstanding the previous reasons for allowance, the cited references do not teach “planing each layer of the first material; and curing each layer of the first material” as recited in claim 27. Therefore, claim 27 is in condition for allowance.

Notwithstanding the previous reasons for allowance, the cited references do not teach “planing each layer of the second material; and curing each layer of the second material” as recited in claim 28. Therefore, claim 28 is in condition for allowance.

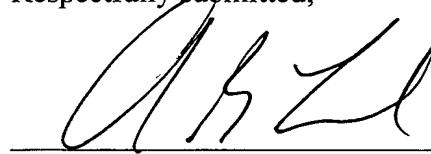
Conclusion

In light of the foregoing amendments and for at least the reasons set forth above, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested.

In addition, any other statements in the Office Action that are not explicitly addressed herein are not intended to be admitted. In addition, any and all findings of inherency are traversed as not having been shown to be necessarily present. Furthermore, any and all findings of well-known art and official notice, or statements interpreted similarly, should not be considered well known since the Office Action does not include specific factual findings predicated on sound technical and scientific reasoning to support such conclusions.

If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully submitted,



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CERTIFICATE OF MAILING

I hereby certify that the below listed items are being deposited with the U.S. Postal Service as first class mail in an envelope addressed to:

**Mail Stop Amendment
Commissioner for Patents
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on 3/15/07.

Sara Rogers
Sara A. Rogers

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Confirmation No.: 7814

Gregory J. May

Group Art Unit: 1732

Serial No.: 10/820,409

Examiner: Jeffrey Michael Wollschlager

Filed: April 8, 2004

Docket No. HP: 200312860-1
TKHR: 050834-1490

The following is a list of documents enclosed:

Return Postcard
Amendment Transmittal Sheet
Response